

The Role of Renewable Energy in EIA's Annual Energy Outlook and Multiple Emission Studies

Scott Sitzer

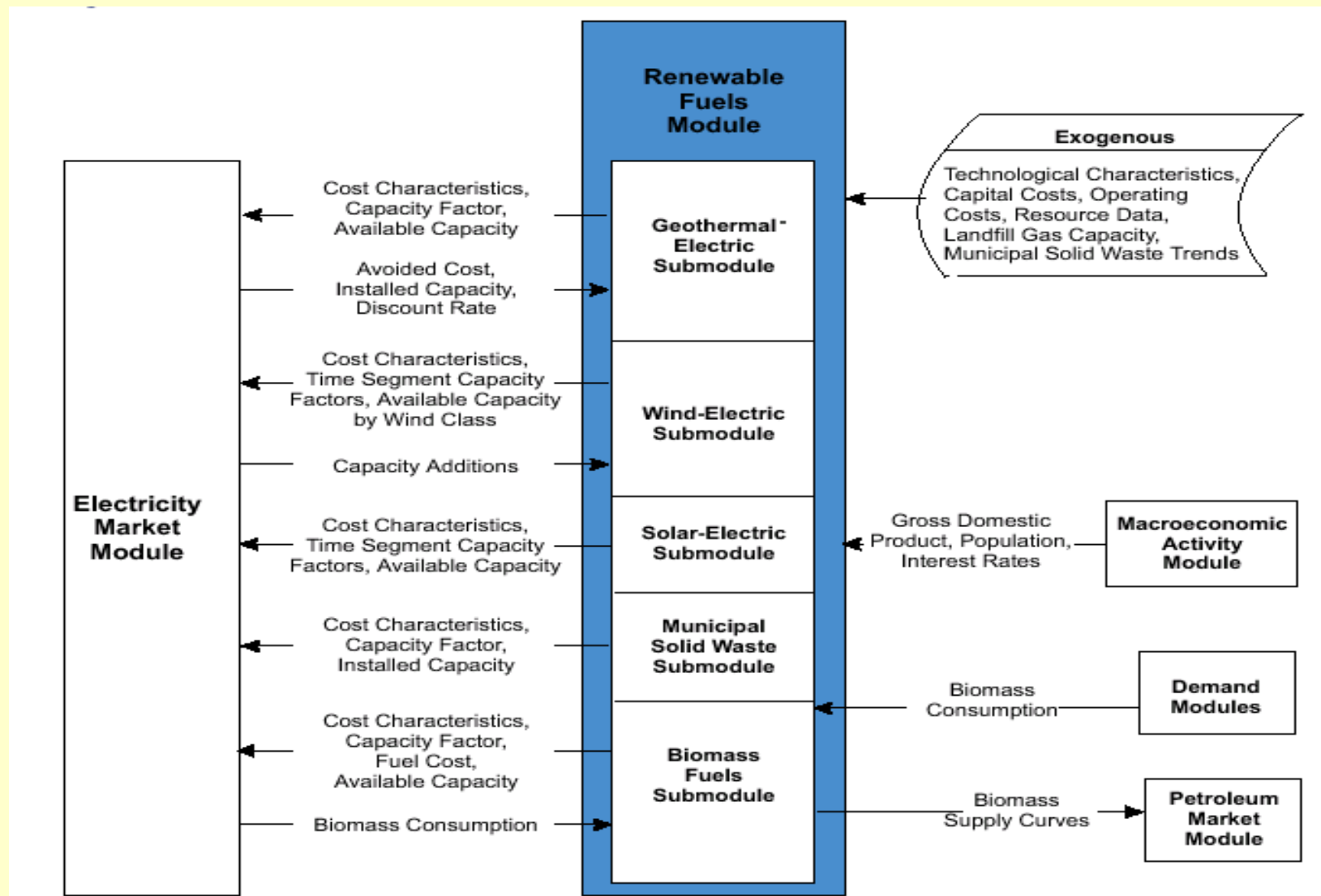
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Outline

- *Renewables in the National Energy Modeling System*
- *Annual Energy Outlook 2002 Reference Case*
- *Other Analyses:*
 - *AEO2002 High Renewables Case*
 - *Multiple Emission Cases*
 - *Renewable Portfolio Standard Cases*

NEMS Renewable Fuels Module



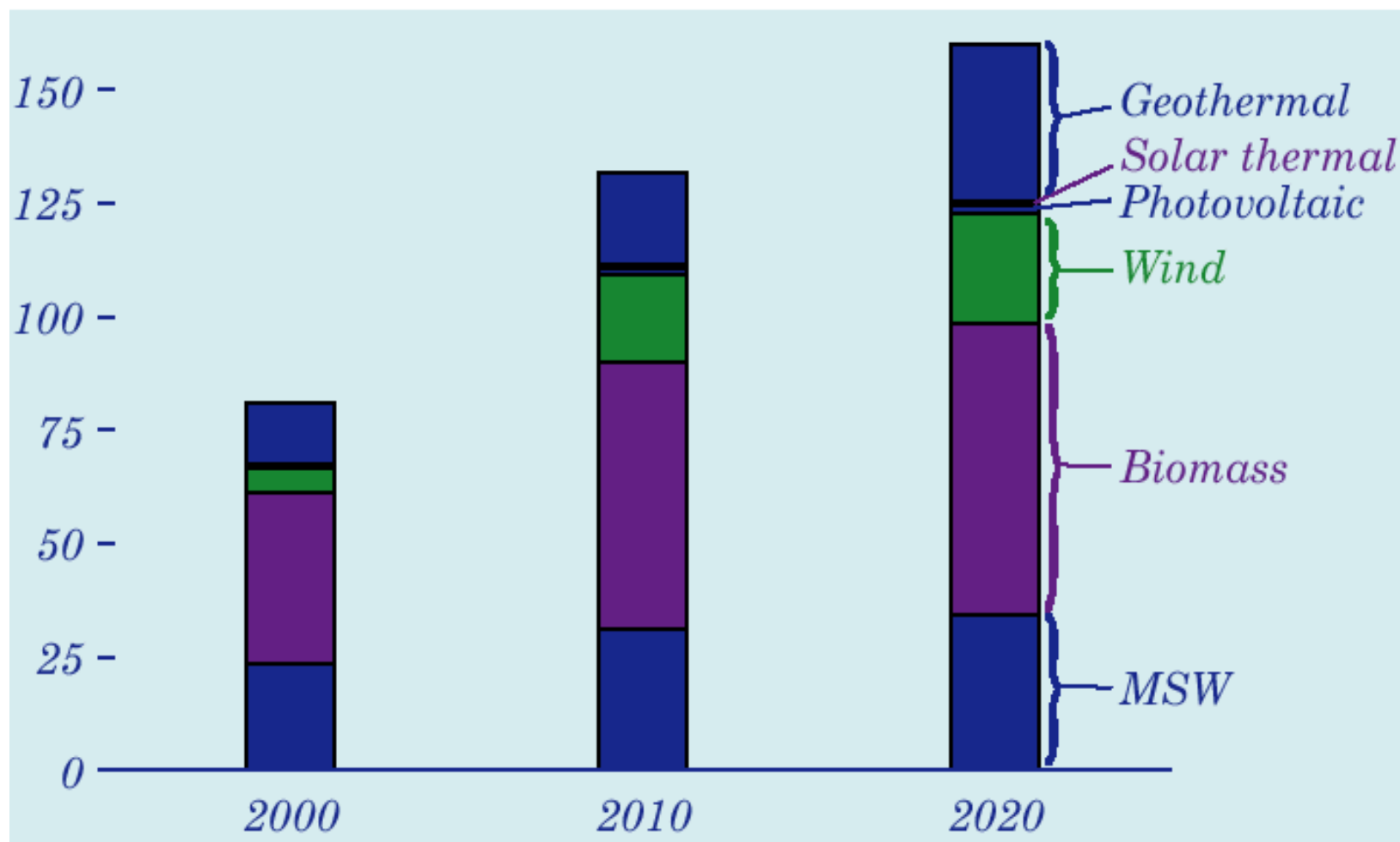
Annual Energy Outlook 2002

Renewable Energy Projections



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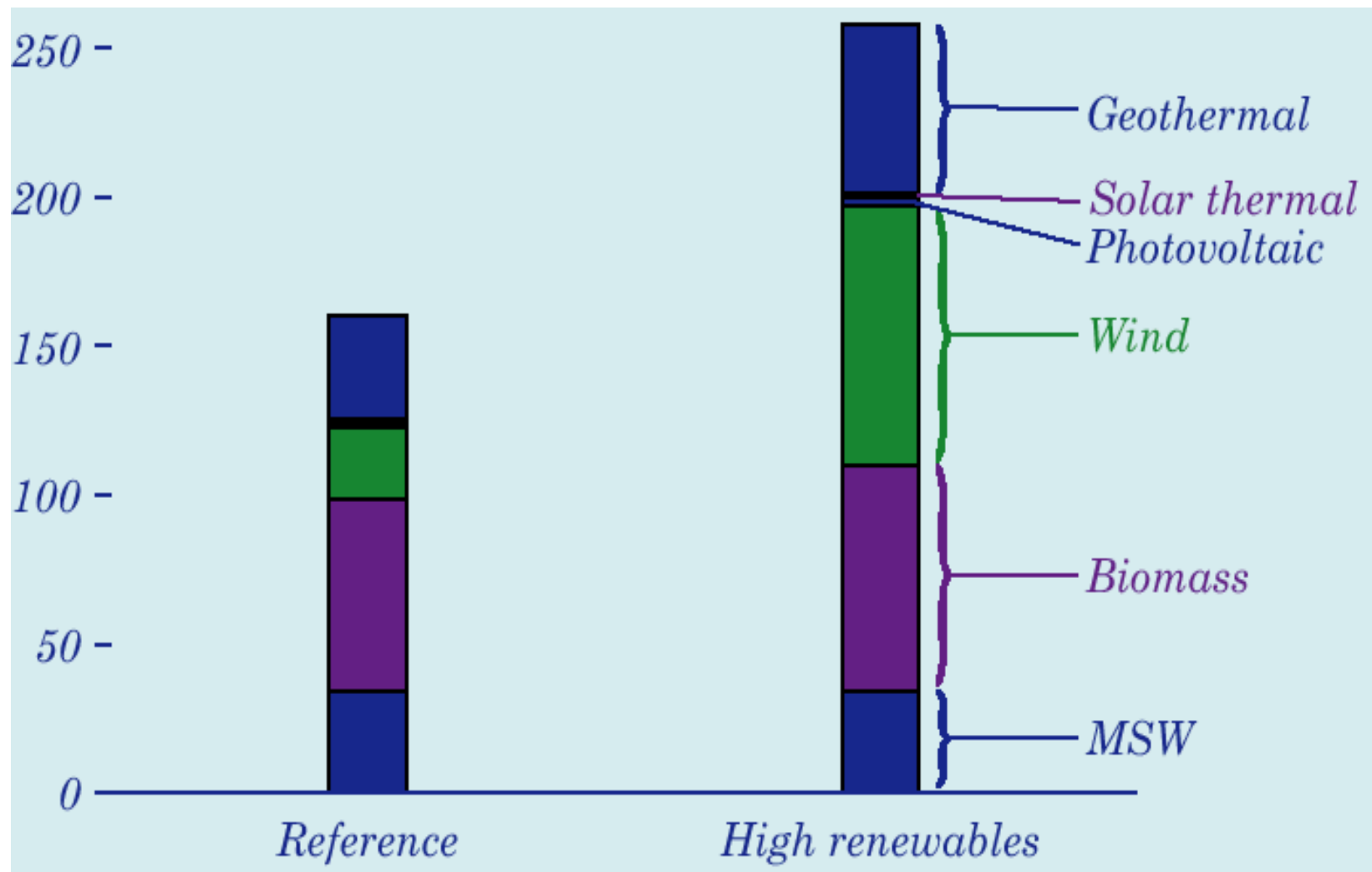
*Projected nonhydroelectric renewable electricity generation
by energy source, 2010 and 2020 (billion kilowatthours)*



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*Projected nonhydroelectric renewable electricity generation
by energy source in two cases, 2020 (billion kilowatthours)*

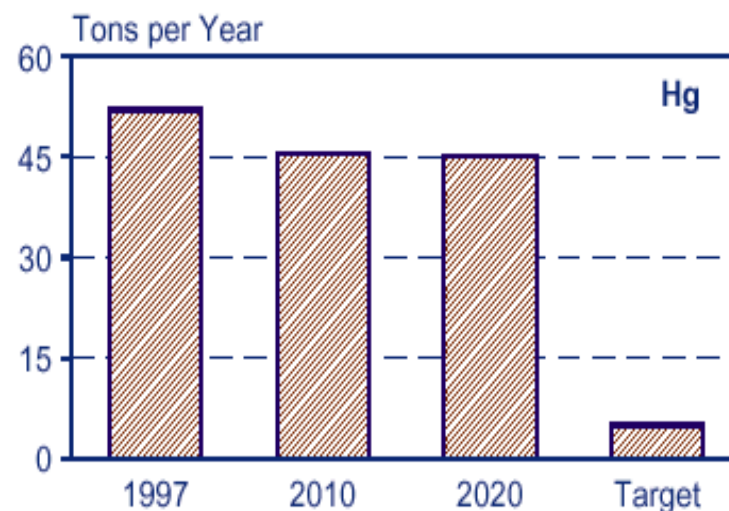
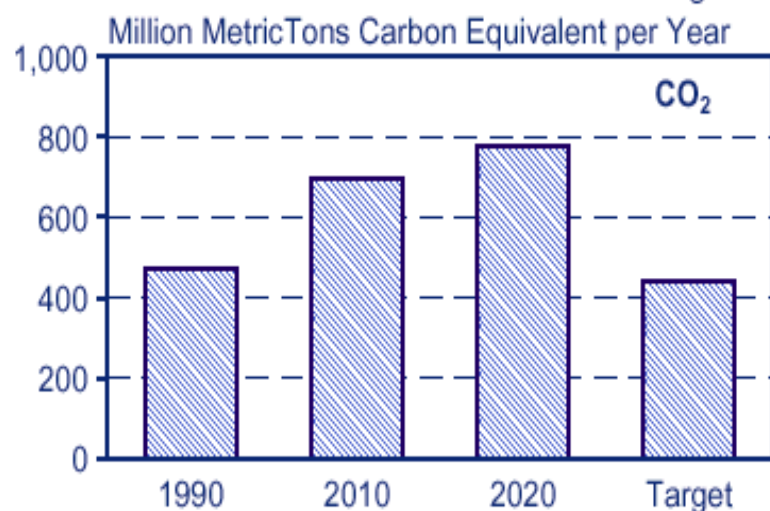
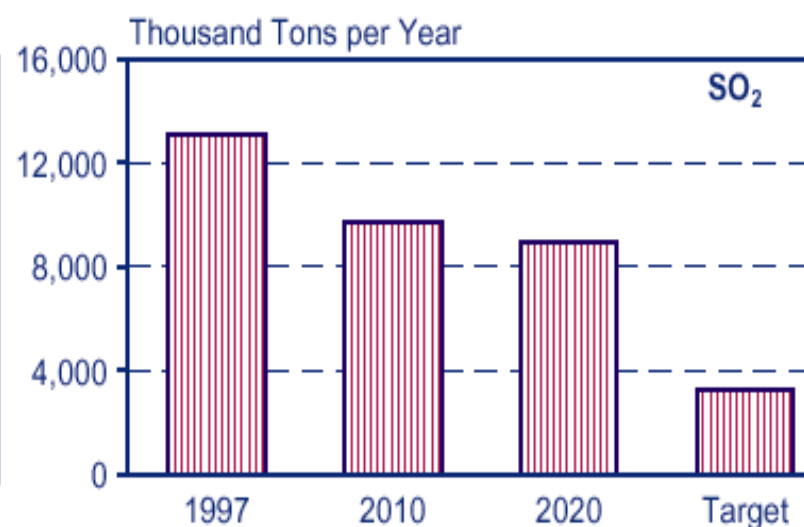
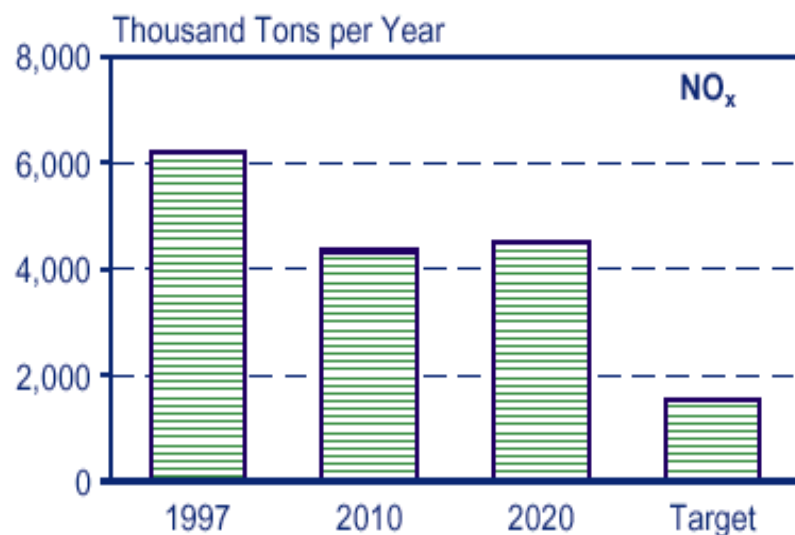


Multiple Emission and Renewable Portfolio Standard Studies

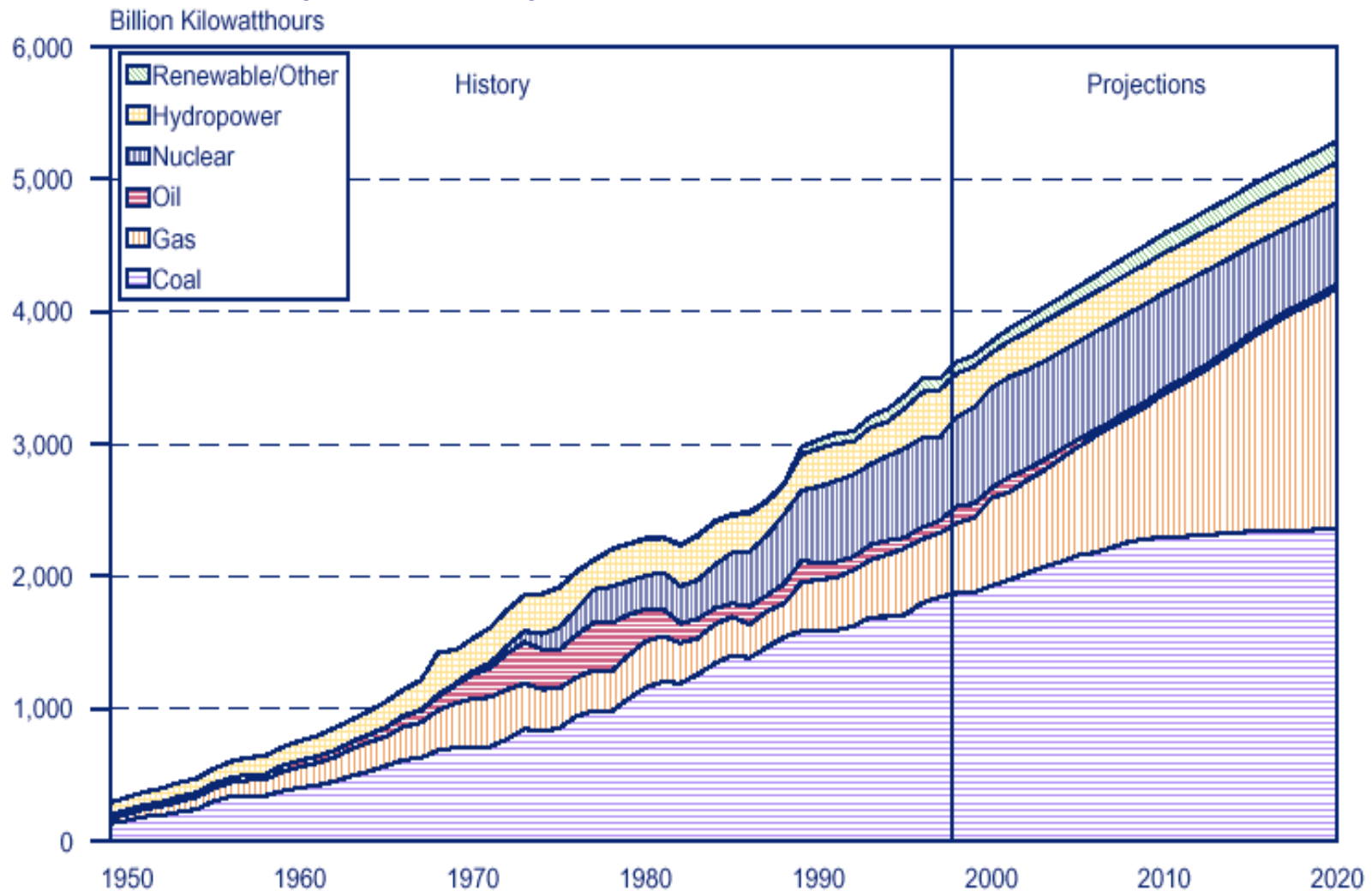


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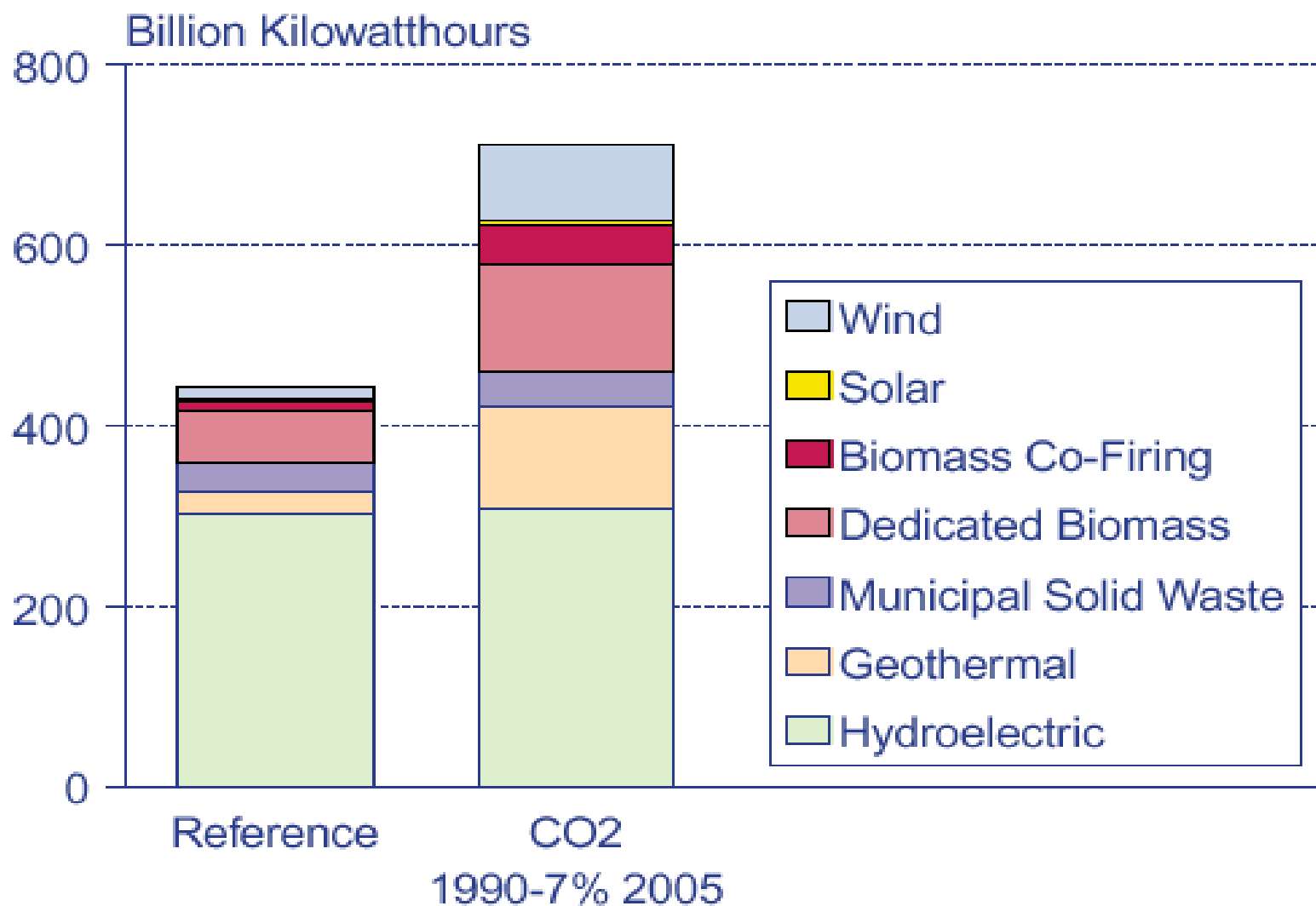
Historical Emissions, Reference Case Projections for 2010 and 2020, and Target Caps for Electricity Generators, Excluding Cogenerators



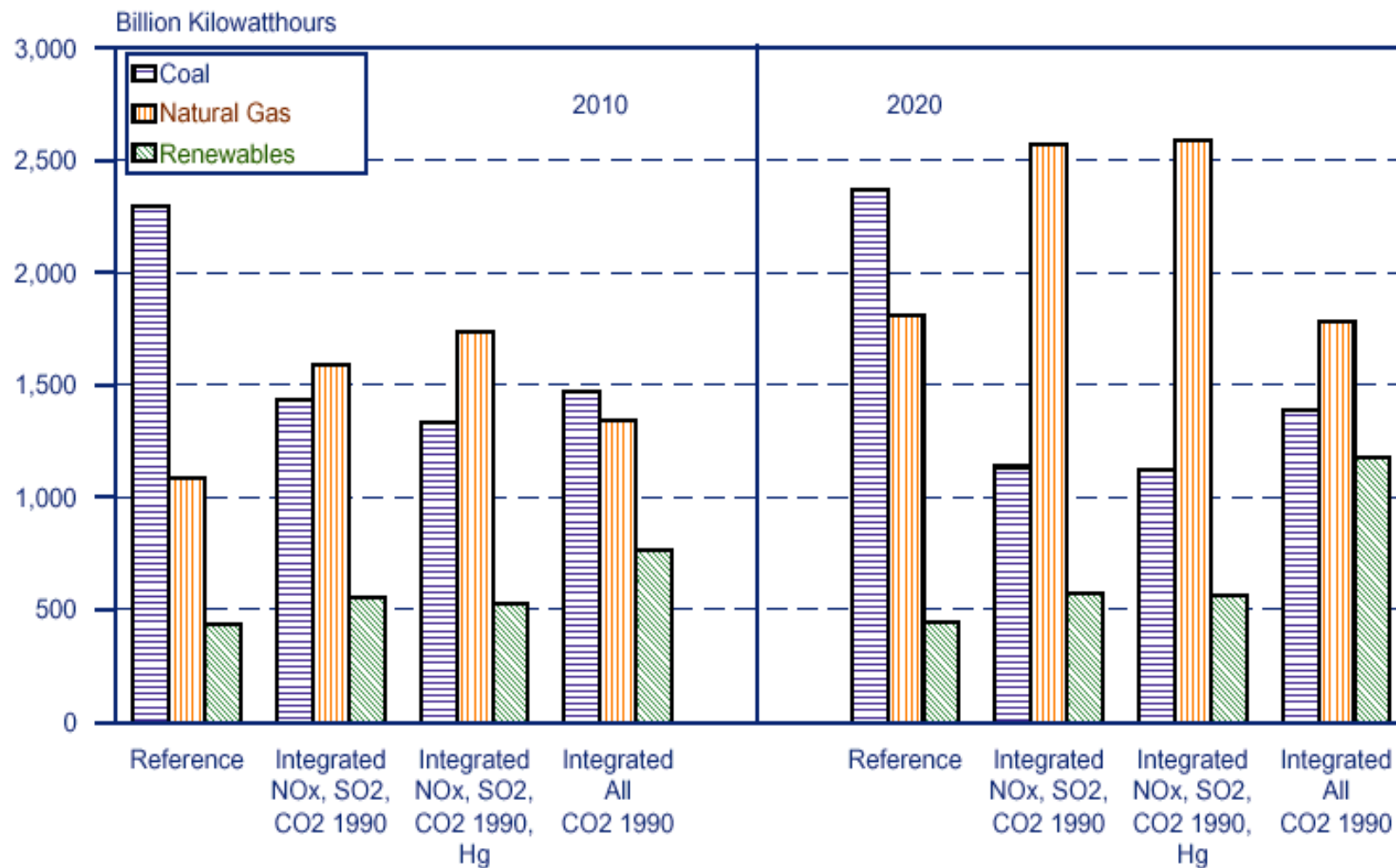
Electricity Generation by Fuel, 1949-1999, and Projections for the Reference Case, 2000-2020



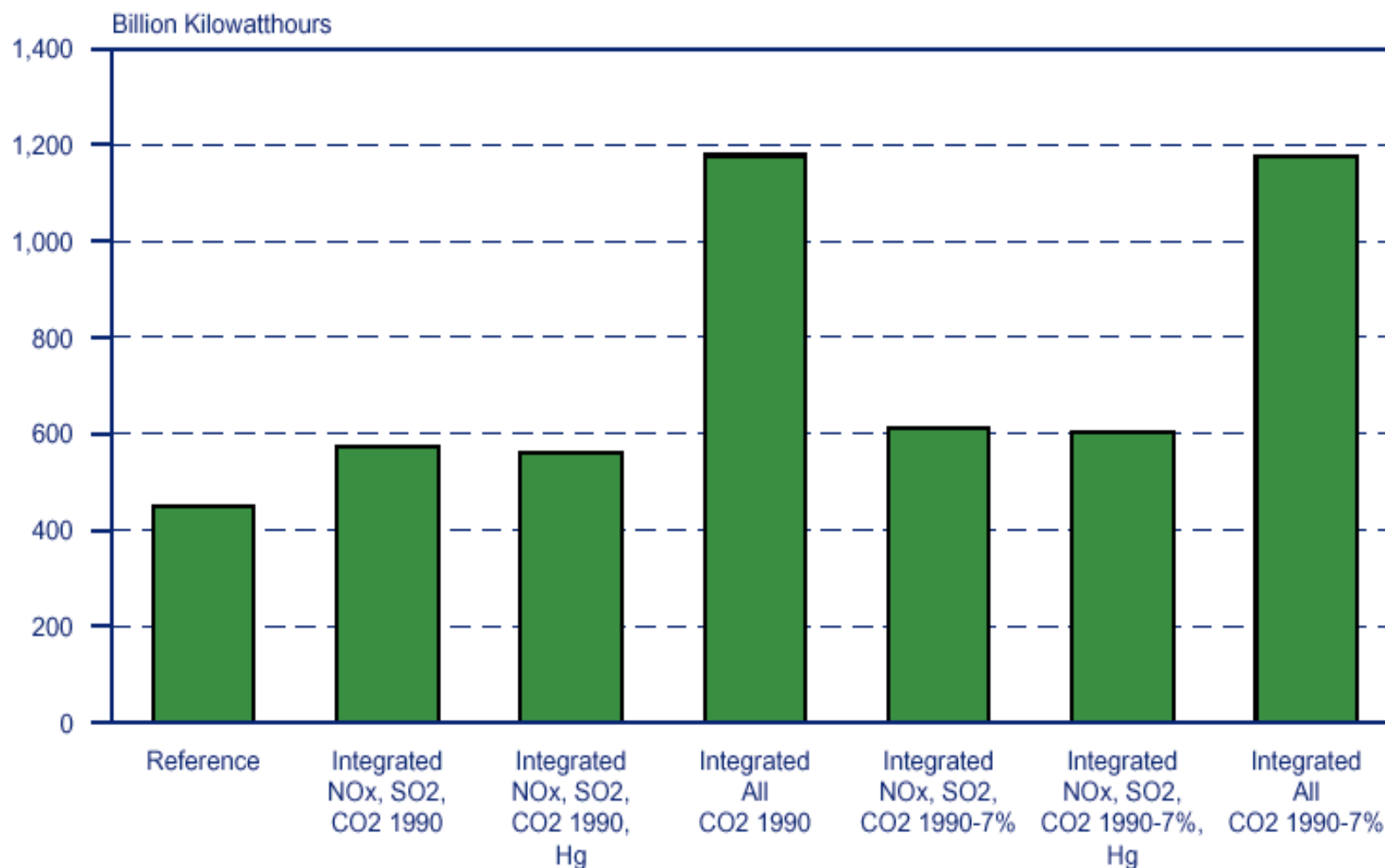
*Projected Renewable Electricity Generation by Fuel in the Reference
and CO2 1990-7% 2005 Cases, 2020*



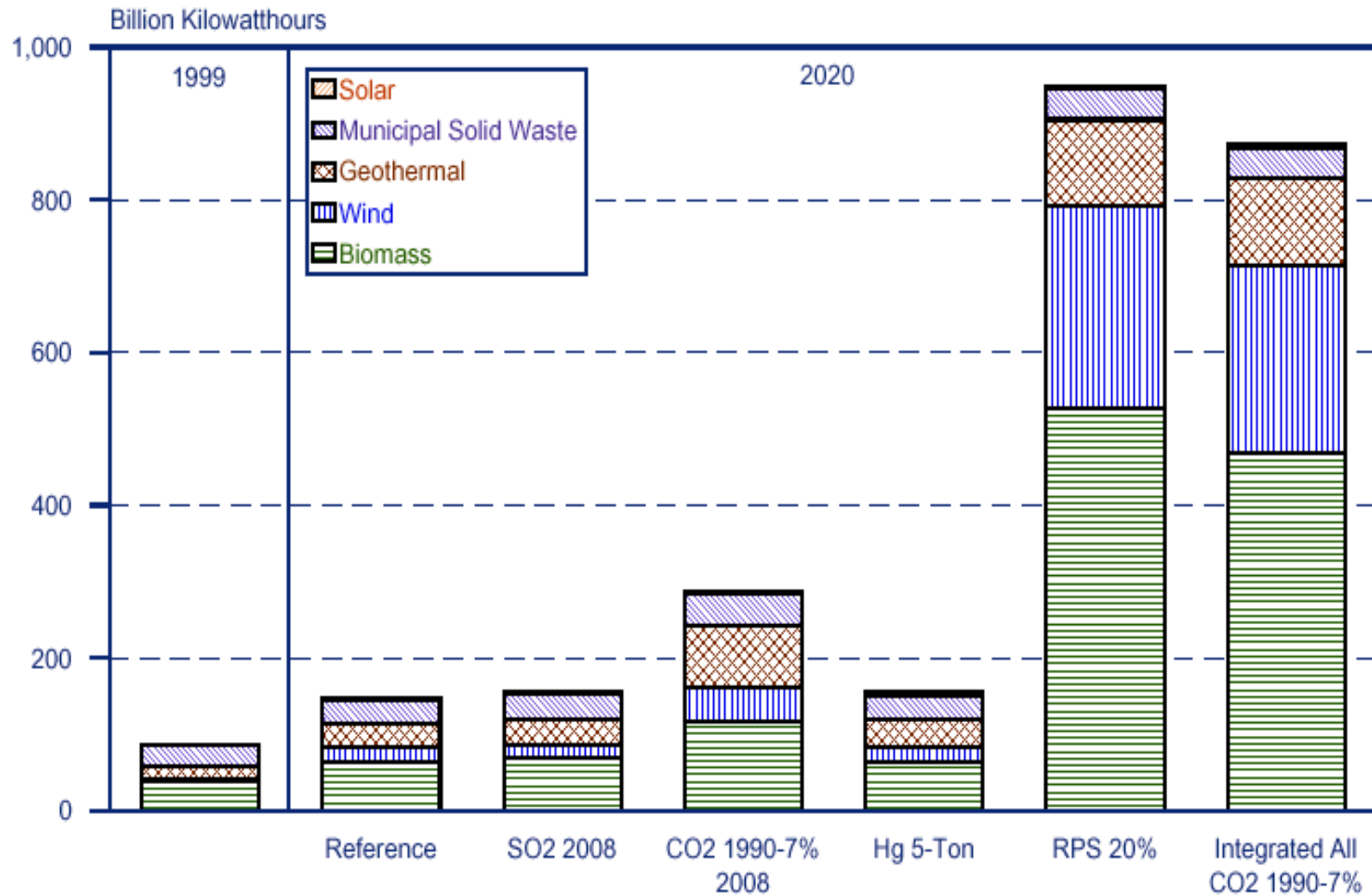
*Projected Electricity Generation from Coal, Natural Gas, and
Renewable Fuels in the Reference
and Integrated CO₂ 1990 Cases, 2010 and 2020*



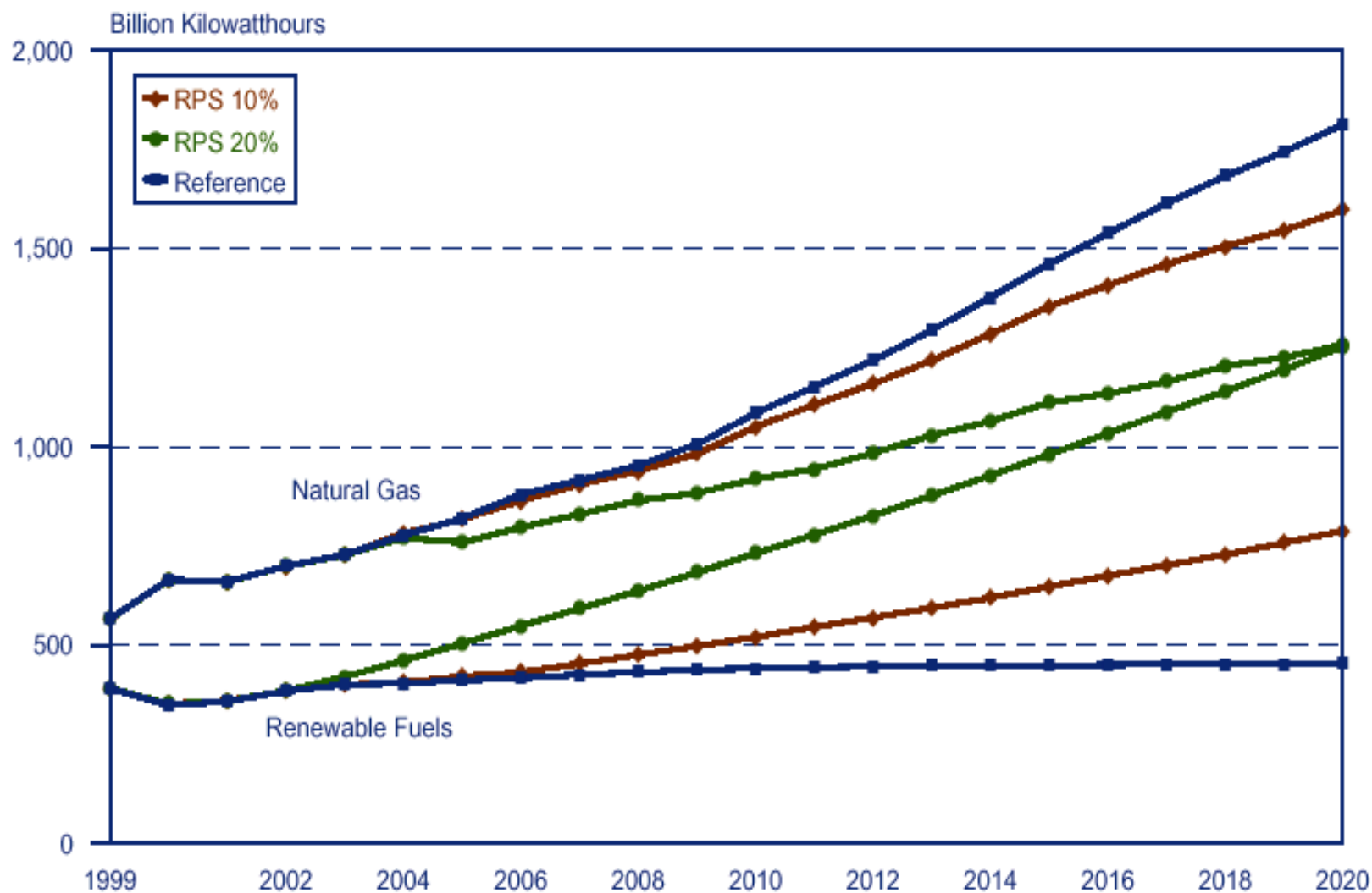
Projected Electricity Generation from Renewable Fuels in the Reference Case and Integrated Cases with CO2 Emission Caps, 2020



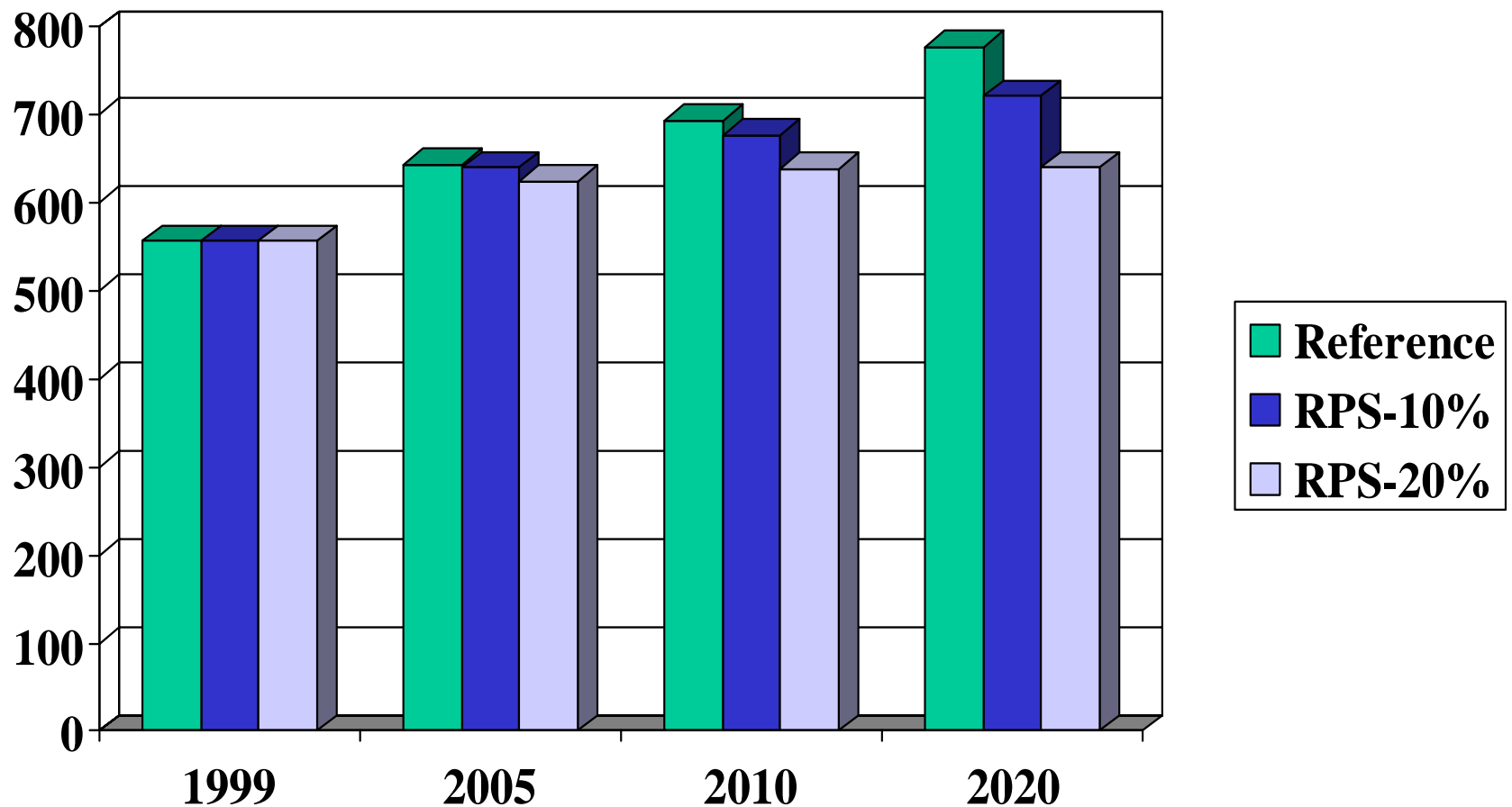
Projected Electricity Generation from Nonhydroelectric Renewable Energy Sources, 2020



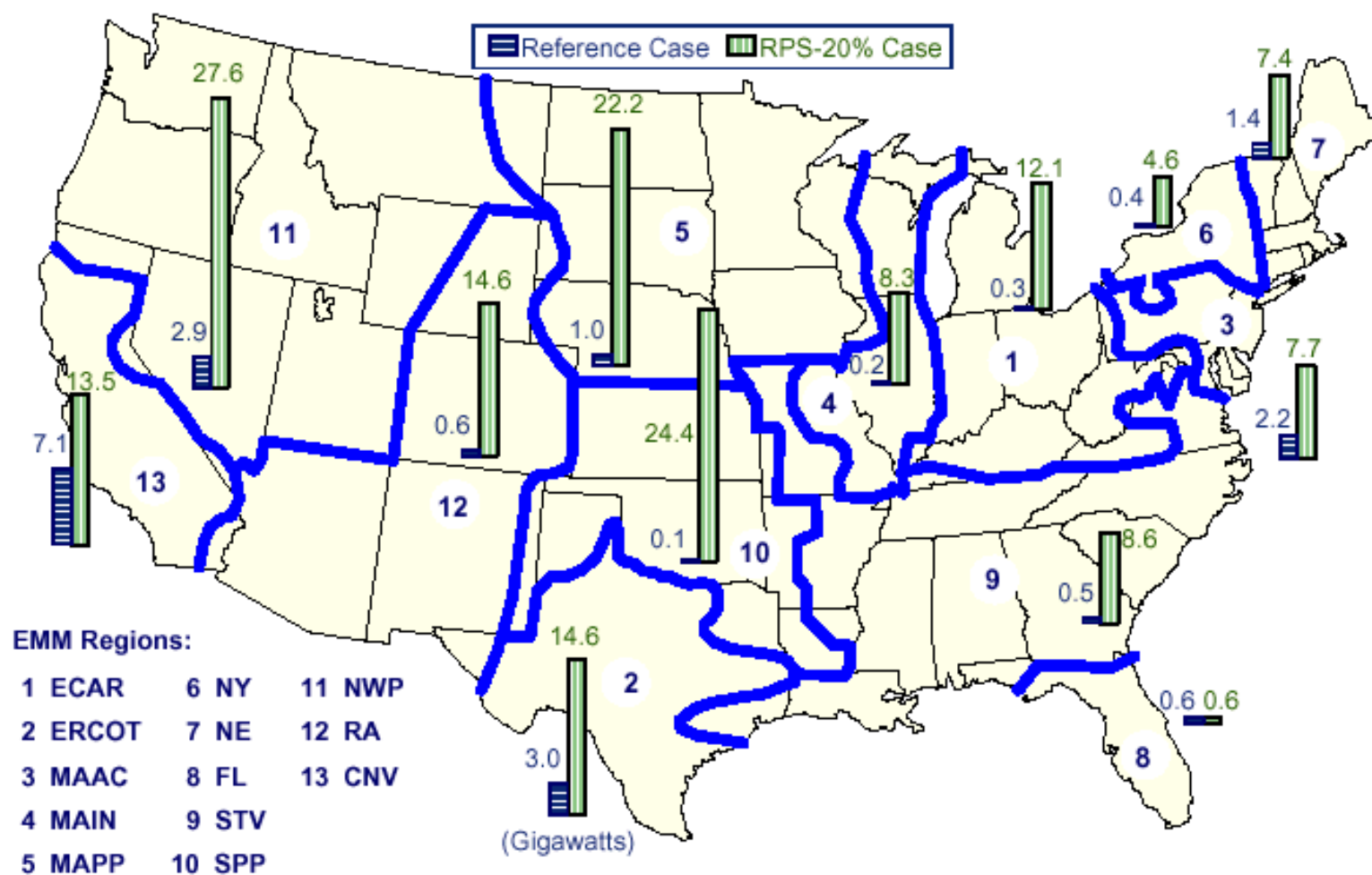
Projected Electricity Generation from Natural Gas and Renewable Fuels in the Reference, RPS 20%, and RPS 10% Cases, 2000-2020



Electricity-Related CO₂ Emissions in the Reference, RPS-10%, and RPS-20% Cases, 1999-2020 (million metric tons carbon equivalent)



Cumulative Additions to Nonhydroelectric Renewable Generating Capacity by NEMS Electricity Market Module Region in the Reference and RPS-20% Cases, 2000-2020



Conclusions

- *Renewables can play a significant role in reducing power plant emissions*
- *While renewables respond positively to assumed reductions in emissions, their greatest growth is under a Renewable Portfolio Standard*
- *Natural-gas fired generation is the primary competition for new renewables capacity*